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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/719,985	12/19/2000	Hiroshi Uchida	Q58538	5170

7590 11/17/2003

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EXAMINER

ZUCKER, PAUL A

ART UNIT	PAPER NUMBER
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1621

DATE MAILED: 11/17/2003

13

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/719,985

Applicant(s)

UCHIDA ET AL.

Examiner

Paul A. Zucker

Art Unit

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-7,9-11 and 13-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-7,9-11 and 13-30 is/are rejected.
- 7) ☒ Claim(s) 31-36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☒ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on & July 2003 has been entered.

Current Status

2. This action is responsive to Applicants' amendment of 14 September 2003 in Paper No 12.
3. Receipt and entry of Applicants' amendment is acknowledged.
4. Applicant's cancellation of claims 4, 8 and 12 is acknowledged.
5. Applicant's addition of new claims 31-36 is acknowledged.
6. Claims 1-3,5-7, 9-11 and 13-36 are pending.
7. The rejection under 35 USC § 102(b) set forth in paragraph 7 of the previous Office Action in Paper No 8 is withdrawn in response to Applicants' amendment.

Rejections and Objections

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

8. Claims 1-3, 5-7, 9-11 and 13-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Atkins et al (US 5,861,530 01-1999) in view of Froom et al (US 6,187,949 02-2001). For the purposes of this rejection claim 16 is considered to depend from claim 1.

Atkins teaches (Column 5, lines 24-31; column 5, lines 16-59 and tables indicated therein) a process for the production of esters of lower aliphatic carboxylic acids via the reaction of the corresponding carboxylic acid with an olefin in the presence of a heteropolyacid catalyst and water. Atkins teaches (Column 13, lines 17-21) the reaction of ethylene with acetic acid. Atkins further teaches (Column 2, lines 26-46; column 12, line 52- column 13, line 17, for example) heteropolyacid catalysts and salts thereof corresponding to those instantly claimed. Atkins teaches (Column 3, lines 46-51) the use of ethylene, propylene or mixtures thereof as the olefin.

Atkins is silent with regard to the amount of higher olefin in ethylene when ethylene alone is used as the olefin. Atkins does however disclose (Column 3, lines 49-51) that alkanes are expected to be admixed therewith. The Examiner therefore presumes, in the absence of evidence to the contrary, that the ethylene employed by Atkins contains negligible or undetectable amounts of olefins having three carbons or more. Atkins disclosure is therefore presumed by the Examiner to meet the recited upper limit on the amounts of olefins having three carbons or more since 0 ppm meets the instant limitation. This presumption is further supported by the fact

that Atkins distinguishes between the use of ethylene and mixtures of ethylene and propylene.

Atkins further teaches (Column 1, lines 41-55) the use of the olefin equivalent diethyl ether in amounts of 1-6%. This range embraces the instantly claimed values of 5% and 2.5% (claims 5 and 6, respectively). The limitation of claim 8, since it depends from claim 7, is met since the amount of the specified olefin equivalents is presumed, on the basis of Atkins silence with regard thereto, to be 0 ppm. The limitation of claim 10 is met if, for example, the amount of olefin of three carbons or more is 0 ppm and the olefin equivalent is present to the extent of 1 mol%.

Instantly claimed is a process for producing an ester by reacting a carboxylic acid and ethylene in the vapor phase in the presence of a heteropolyacid catalyst in which limitations are placed on the permitted amounts of olefins of three carbons or more and olefin equivalents (compounds capable of producing olefins under the conditions of the reaction).

The differences between the process taught by Atkins and the instantly claimed process are as follows.

- i. Atkins does not teach the presence of olefin equivalent in percentages as low as .1 %;
- ii. Atkins is silent with regard to the presence of butanes in the ethylene starting material and therefore also controlling the limits of these impurities as is instantly claimed;

iii. Atkins does not teach a combined recycle and feed stream

Froom, however, teaches (Column 4, lines 35-47) the use of olefin equivalent diethyl ether in amounts as low as 0.1 mole% relative to the entire reaction mixture. This corresponds to a value of 1000 ppm one fifth of which is 200 ppm. This teaching in combination with the presumption of 0 ppm content of olefin of three carbons or higher therefore renders instant claims 7 and 11 obvious. Froom further teaches (Column 8, line 42, Table 8) 0% butenes in the feed gas. This teaching in combination with that of Atkins renders instant claims 4 and 12 obvious. Froom also teaches (Column 8, lines 61-64 and Table 8) partial recycle of material containing 0% butenes to the reactor.

Thus the instantly claimed process would have been obvious to one of ordinary skill in the art. The suggestion to combine can be found in the common field of the invention. Further suggestion for the combination of the two references can be found in the fact that Atkins is cited (Patent face, right column, first line) by Froom. The process of Froom corresponds to an optimization of the process of Atkins and the combination would therefore be expected by one of ordinary skill in the art to be successful.

Examiners' Response to Applicants' Remarks with regard to This Rejection

9. Applicants have presented several arguments with regard to this rejection. The Examiner responds to these below:

- a. Applicants state that it is generally known to those of skill in the art that butenes are produced in processes such as the instant one.
 - i. Applicants point to the specification (Example 1) in support of this statement. The Examiner points out that the amount of butenes produced in Experiment 1 are not specifically indicated but are merely assumed to constitute some unspecified part of the trace by-products produced.
 - ii. Applicants further point to Froom (which, the Examiner notes, is not prior art) who states that butenes are produced in the esterification process. The Examiner notes, however, that Froom does not provide any data indicating the extent to which butenes form and there is no indication that it exceeds the levels instantly claimed.
- b. Applicants further argue that the present claims are completely different from the processes of the cited art in that butenes are positively removed from the recycling process. In response to Applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., removal of butenes from recycling stream) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant's arguments filed 14 September 2003 have been fully considered but they are not persuasive for the reasons indicated above.

Claim Objections

10. Claims 31-36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Allowable Subject Matter

11. Claims 31-36 are drawn to allowable subject matter. The following is a statement of reasons for the indication of allowable subject matter: The closest prior art of record, Atkins et al (US 5,861,530 01-1999) and (US 6,187,949 02-2001) neither discloses nor fairly suggests the instant process step of controlling the level of butenes in the recycle stream by removal of butenes.

Conclusion

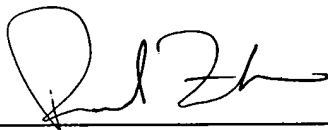
12. Claims 1-3,5-7, 9-11 and 13-36 are pending. Claims 1-3, 5-7, 9-11 and 13-30 are rejected. Claims 31-36 are objected to.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Zucker whose telephone number is 703-306-0512. The examiner can normally be reached on Monday-Friday 7:00-3:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 703-308-4532. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1235.

A handwritten signature in black ink, appearing to read 'Paul Zucker', is written over a horizontal line.

Paul A. Zucker, Ph. D.
Patent Examiner
Technology Center 1600